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## EUROPEAN PATENT APPLICATION

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A61K 31/40, A61K 31/415**

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(54) **Method of treating shock using a potassium channel activator.**

(57) A novel method for reducing or preventing impairment of cardiac and peripheral function resulting from shock is disclosed. The method comprises administering to a patient in need thereof a potassium channel activator.

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# PARTIAL EUROPEAN SEARCH REPORT

which under Rule 45 of the European Patent Convention shall be considered, for the purposes of subsequent proceedings, as the European search report

Application Number

EP 91 12 0768

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	DRUG DEVELOPMENT RESEARCH, vol. 19, no. 1, 1990, pages 91-97, Wiley-Liss, Inc.; T. HAMAGUCHI et al.: "Cardioprotective effects of nicorandil on calcium paradox-induced injury" * Paragraph: "Discussion" *	1,2,3	A 61 K 31/00 A 61 K 31/35 A 61 K 31/40 A 61 K 31/415
X	EP-A-0 351 767 (SQUIBB) * Entire document *	1,2,3,4	
X	RESPIRATION AND CIRCULATION, vol. 37, no. 11, November 1989, pages 1231-1235; J. HAYASHI et al.: "Protective effects of nicorandil against catecholamine induced myocardial damage under hypoxia" * Page 1235, abstract *	1,2,3,4	
P,X	EP-A-0 401 010 (SQUIBB) * Claims; page 11 *	1-6	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A 61 K
INCOMPLETE SEARCH			
<p>The Search Division considers that the present European patent application does not comply with the provisions of the European Patent Convention to such an extent that it is not possible to carry out a meaningful search into the state of the art on the basis of some of the claims</p> <p>Claims searched completely : Claims searched incompletely : 2, 4 Claims not searched : Reason for the limitation of the search:</p> <ol style="list-style-type: none"> <li>1. It is not clear which mode of administration is meant (claim 2)</li> <li>2. A compound cannot be sufficiently described by its pharmacological effect (claim 4)</li> </ol>			
Place of search THE HAGUE		Date of completion of the search 15-07-1992	Examiner KLAVER T.
CATEGORY OF CITED DOCUMENTS		<p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>&amp; : member of the same patent family, corresponding document</p>	
<p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p>			



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## CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid,  
namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

## LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions,  
namely:

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- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid,  
namely claims:
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims,  
namely claims:



DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. 5)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	TRENDS IN PHARMACOLOGICAL SCIENCE, vol. 9, January 1988, pages 21-28, Elsevier Publications, Cambridge, GB; N.S. COOK: "The pharmacology of potassium channels and their therapeutic potential" ---		
A	CIRCULATIONS RESEARCH, vol. 62, no. 4, April 1988, pages 679-686; R.P. HOF et al.: "Mechanism of action and systemic and regional hemodynamics of the potassium channel activator BRL34915 and its enantiomers" ---		
A	AMERICAN JOURNAL OF PHYSIOLOGY, vol. 259, no. 2, part 2, August 1990, pages F348-F356, The American Physiological Society; L. DUBE et al.: "Hypotonic shock activated a maxi K <sup>+</sup> channel in primary cultured proximal tubule cells" ---		TECHNICAL FIELDS SEARCHED (Int. Cl. 5)
A	EP-A-0 389 861 (FUJISAWA) ---		
A	EP-A-0 359 537 (BEECHAM) ---		
A	EP-A-0 344 747 (FUJISAWA) -----		



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**LACK OF UNITY OF INVENTION a posteriori**

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims 1,2,3 in part,4: Use of nicorandil against the impairment of cardiac function due to shock.
2. claim 3 in part: Use of minoxidil against the impairment of cardiac function due to shock.
3. claim 3 in part: Use of pinacidil against the impairment of cardiac function due to shock.
4. claim 3 in part: Use of cromakalim against the impairment of cardiac function due to shock.
5. claims 3,5,in part,6: Use of a compound of formula C,E or F against the impairment of cardiac function due to shock.
6. claims 3,5 in part: Use of a compound of formula D, against the impairment of cardiac function due to shock.